

WATER RESOURCES

RIVERS AND STREAMS

Indicator 1. Water Quality of Rivers and Streams

Background Kentuckians enjoy the benefits of an estimated 89,431 miles of rivers and streams. The quality of these waterways varies from severely degraded to clean enough for swimming, fishing or use as a drinking water source. The Kentucky Division of Water maintains a network of ambient water quality stations throughout the state to monitor water quality.¹ In 1997, 1998 and 1999, these stations monitored 8.4 percent of the 89,431 stream and river miles for 32 different parameters. While this data may not represent a statistically valid sample of water quality statewide, it does provide a general indicator of water quality in Kentucky.

Agricultural activities are the leading source of water pollution in monitored waterways based on the most recent and available monitoring data. Contaminated runoff containing agricultural nutrients and chemicals is impacting 25 percent of the monitored impaired stream miles. Resource extraction (coal mining and petroleum activities), follows impacting 15 percent of the miles impaired, while sewage treatment plants are impairing 13 percent of the monitored waterways.

Disease-carrying pathogens, often associated with untreated or poorly treated animal and human waste, remain the principal pollutant, impairing 31 percent of the stream miles monitored. In 1999, the state declared that 234 miles of Kentucky's rivers and streams were too polluted for swimming because of high levels of fecal coliform bacteria

Goal Safeguard from pollution the uncontaminated waters of the Commonwealth; prevent the creation of any new pollution of the waters of the Commonwealth; and abate any existing pollution per KRS 224.70-100.

Progress State, local and private sector efforts to restore water quality have been ongoing since the passage of the federal Clean Water Act in 1972. During the past 25 years, progress has been made in improving water quality in the state. For example, in 1972, 71 percent of the waterways could not fully support their designated uses, compared to 34 percent in 1997-1999.

At a Glance

River and stream miles 89,431

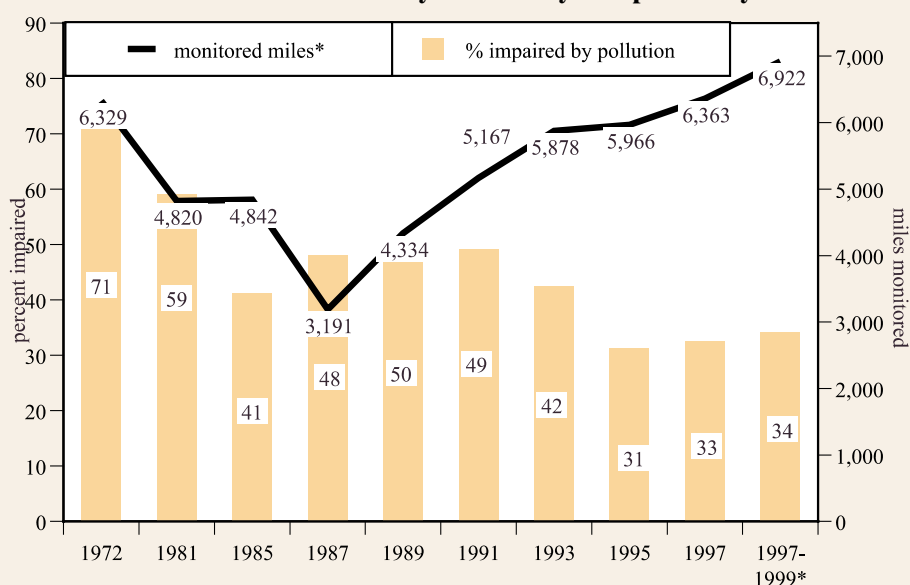
River and stream miles monitored 6,992

Percent of monitored waterways impaired
1972 71%
1989 50%
1995 31%
1997-99 34%

Leading sources of water pollution
agriculture 25%
resource extraction 15%
sewage 13%

Leading causes of water pollution
pathogens 31%
siltation 21%
nutrients 10%

Measure 1. Percent of Kentucky Waterways Impaired by Pollution



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However, trends reveal less progress in restoring water quality in recent years. Since 1995, the percent of impaired waterways has reversed its downward trend and has leveled out. The state is now conducting intensive monitoring on a watershed by watershed basis. This monitoring data may provide a more complete picture of water quality in Kentucky. Each of the state's 11 river basins will be monitored extensively every five years. The intent is to gain a better understanding of overall conditions and pollutants impairing various watersheds, target problems, design effective solutions, and measure success through monitoring and data gathering. Watershed management activities are currently underway in the Kentucky River, Cumberland River and Salt River basins.² Intensive monitoring in the Kentucky River Basin during 1998 and 1999 revealed that one-third of the 1,791 miles assessed could not support uses due to pollution.

The Kentucky Division of Water is also required to establish "Total Maximum Daily Loads" or TMDLs for 196 stream segments and 34 lakes that do not meet state water quality standards. In the TMDL process, state and local interests work together to allocate pollution reduction loads among sources and determine the best way to address the specific problems of a particular waterbody. To date, the Division of Water has completed TMDLs on 30 waterways.

Efforts to control pollution from agricultural operations continue. The Kentucky Agriculture Water Quality Act, passed in 1994, requires all farms that are greater than 10 acres in size and that meet the definition of an agricultural operation to develop and implement water quality plans to protect water quality and prevent pollution. To date, 32,592 agriculture operations (36 percent of the state's 91,000 farms) have voluntarily filed plans with state conservation districts.

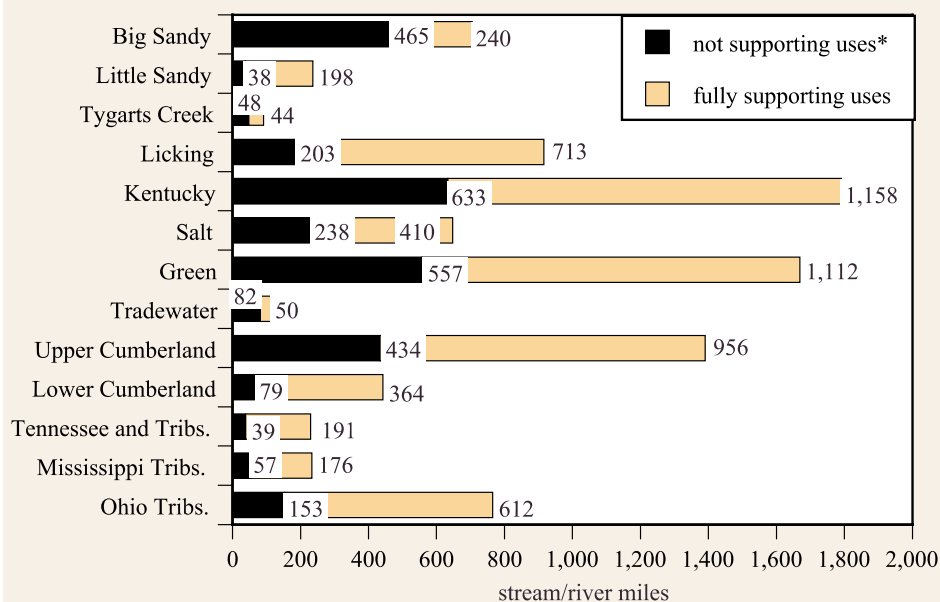
Footnotes

1. There were 44 fixed, statewide stations in the pre-watershed initiative ambient water quality sampling network prior to 1998. This network was increased to 71 in 1998 and

was then also supplemented by approximately 25 rotating watershed stations. Most of the 44 (and now 71) stations are located at the downstream end and mid-unit in 8-digit hydrologic units and the downstream end of major tributaries. Their purpose was and is to characterize the water quality of the major watersheds in the state, including long-term trends.

2. More information about the Watershed Framework and TMDL development is available by visiting the Ky. Division of Water's Web site at <http://water.nr.state.ky.us/dow/watrshd.htm>.

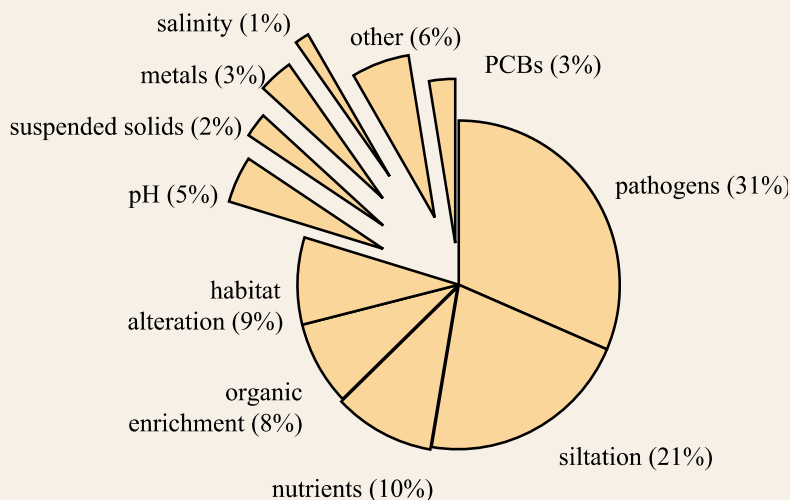
Measure 2. Stream and River Miles Impaired by Pollution by River Basin (1997-99)



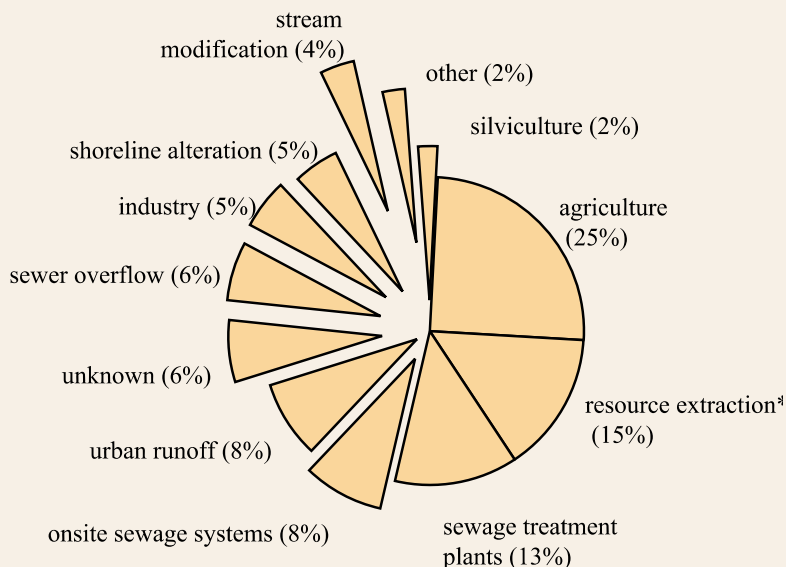
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Measure 3. Causes of Stream and River Pollution in Kentucky (1997-99)



Measure 4. Sources of Stream and River Pollution in Kentucky (1997-99)



cent based on 1998-99 monitoring data for the Kentucky River Basin and 1997 monitoring data for the other river basins. *Water pollution from resource extraction activities (petroleum and coal mining). Known sources include 366 miles impaired by coal mining and 33.7 miles impaired by petroleum activities. Coal mining impacts include: surface mining (122 miles), subsurface mining (65 miles), acid mine drainage (90.3 miles), abandoned mining (43.1 miles) and inactive mining (45.6 miles). Source: Ky. Division of Water.

Measures - notes and sources

Measure 1. 1972-1981 data include river and stream miles monitored and evaluated. 1982-1999 based on monitored river and stream miles. Ohio River monitoring data collected by ORSANCO not included. During 1998-99, the Division of Water only monitored waterways in the Kentucky River Basin. *Percent based on 1998-99 monitoring data for the Kentucky River Basin and 1997 monitoring data for the other river basins in Kentucky. Source: Ky. Division of Water.

Measure 2. Based on monitored and evaluated waterways. 1998-99 monitoring data only collected for the Kentucky River. Remaining river basins based on 1997 monitoring data. *Miles not supporting or partially supporting one or more uses (swimming, fishing, drinking water). Source: Ky. Division of Water.

Measure 3. Based on monitored miles. Ohio River monitoring data collected by ORSANCO not included. In 1999 the Division of Water only monitored waterways in the Kentucky River Basin. *Percent based on 1998-99 monitoring data for the Kentucky River Basin and 1997 monitoring data for the other river basins. Source: Ky. Division of Water.

Measure 4. Based on monitored miles. Sources are determined from the data available in geographic information system overlays, including aerial photos and topographic maps of land cover and use, point source discharges and monitoring data, locations of sources and other features that may affect the waters and filed observations. Ohio River monitoring data collected by ORSANCO not included in this chart. In 1998-99, the Division of Water only monitored waterways in the Kentucky River Basin. Per-